

(19)



(11)

EP 3 100 907 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
14.11.2018 Bulletin 2018/46

(51) Int Cl.:
B60N 2/22 (2006.01) **B60N 2/66** (2006.01)
B60N 2/90 (2018.01)

(21) Application number: **16172116.2**

(22) Date of filing: **31.05.2016**

(54) **LUMBAR SUPPORT ASSEMBLY**

LENDENWIRBELSTÜTZANORDNUNG

ENSEMBLE DE SUPPORT DE LOMBAIRE

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

(30) Priority: **02.06.2015 KR 20150077944**

(43) Date of publication of application:
07.12.2016 Bulletin 2016/49

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Description**BACKGROUND OF THE INVENTION****Field of the Invention**

[0001] The present invention relates to a lumbar support assembly. More particularly, the present invention relates to a lumbar support assembly which is disposed within a vehicle seat back to comfortably support the passenger's back and waist regions.

Description of Related Art

[0002] In general, seats are disposed in a vehicle so that passengers may sit on the seats and such a seat includes a seat cushion to support the passenger's hips, a seat back to support the passenger's back, an arm rest on which the passenger's arm may rest, and a head rest to support the passenger's head.

[0003] Thereamong, in the case of the seat back, a seat back frame forming the frame of the seat back is disposed within the seat back and a lumbar support assembly to support the passenger's back through a comfort mat is disposed on the seat back frame.

[0004] The lumbar support assembly has a variable structure which may be fitted to the passenger's back and spine shape so as to effectively reduce passenger fatigue during driving of the vehicle.

[0005] In a conventional variable lumbar support assembly, a protrusion is formed on a rotary rod, which is combined with a seat back frame and rotates, a comfort mat to support the waist of a passenger is disposed on the protrusion, and the rotary rod rotates according to the posture of the passenger sitting on a seat and moves the comfort mat in the forward and backward directions of the seat back frame to support the back and waist of the passenger.

[0006] However, in the conventional variable lumbar support assembly, since the position of the rotary rod is fixed, the comfort mat moves only in the forward and backward directions by rotation of the rotary rod and, thus, the passenger sitting on the seat may not adjust transformation of the comfort mat according to his/her own physical conditions.

[0007] EP 2 626 239 A1 discloses a lumbar support assembly comprising a fixing wire, a comfort mat, an operating device, and a rotating device including an upper plate, a lower plate, and a support mat.

[0008] The information disclosed in this Background of the Invention section is only for enhancement of understanding of the general background of the invention and should not be taken as an acknowledgement or any form of suggestion that this information forms the prior art already known to a person skilled in the art.

BRIEF SUMMARY

[0009] Various aspects of the present invention are directed to providing a lumbar support assembly through which a passenger may adjust transformation of a comfort mat depending on the passenger's own physical conditions so as to optimally support the passenger's back and waist regions.

[0010] According to the present invention, this is achieved by a lumbar support assembly according to the features of claim 1. Advantageous further embodiments are described in the subclaims

[0011] It is understood that the term "vehicle" or "vehicular" or other similar terms as used herein is inclusive of motor vehicles in general such as passenger automobiles including sports utility vehicles (SUV), buses, trucks, various commercial vehicles, watercraft including a variety of boats and ships, aircraft, and the like, and includes hybrid vehicles, electric vehicles, plug-in hybrid electric vehicles, hydrogen-powered vehicles and other alternative fuel vehicles (e.g., fuel derived from resources other than petroleum). As referred to herein, a hybrid vehicle is a vehicle that has two or more sources of power, for example, both gasoline-powered and electric-powered vehicles.

[0012] The methods and apparatuses of the present invention have other features and advantages which will be apparent from or are set forth in more detail in the accompanying drawings, which are incorporated herein, and the following Detailed Description, which together serve to explain certain principles of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

FIG. 1 is a perspective view of an exemplary lumbar support assembly in accordance with the present invention.

FIG. 2 is an exploded perspective view of FIG. 1.

FIG. 3 is an exploded perspective view of an operating device shown in FIG. 2.

FIG. 4 is an exploded perspective view of an elevating device shown in FIG. 2.

FIG. 5, FIG. 6, and FIG. 7 are views illustrating the operating state of the exemplary lumbar support assembly in accordance with the present invention.

[0014] It should be understood that the appended drawings are not necessarily to scale, presenting a somewhat simplified representation of various features illustrative of the basic principles of the invention. The specific design features of the present invention as disclosed herein, including, for example, specific dimensions, orientations, locations, and shapes will be determined in part by the particular intended application and use environment.

DETAILED DESCRIPTION

[0015] Reference will now be made in detail to various embodiments of the present invention(s), examples of which are illustrated in the accompanying drawings and described below. While the invention(s) will be described in conjunction with exemplary embodiments, it will be understood that the present description is not intended to limit the invention(s) to those exemplary embodiments.

[0016] With reference to FIGS. 1 to 7, a lumbar support assembly 100 in accordance with various embodiments of the present invention includes a fixing wire 110, a cross wire 120, an upper plate 130, a lower plate 140, a comfort mat 150, a support mat 160, an operating device 170, and an elevating device 180.

[0017] The fixing wire 110 is generally formed in a 'U' shape, the upper end of which is opened, by bending a wire having a designated thickness and the lower end of the fixing wire 110 is combined with a seat back frame by fixing clips.

[0018] Here, the seat back frame is disposed within a vehicle seat back and thus maintains the shape of the seat back, is connected to a seat cushion and thus supports the load of a passenger, and has a shape corresponding to the outline shape of the seat back.

[0019] The cross wire 120 is combined with the upper end of the fixing wire 110 in the width direction by hanger clips 122 and the upper end of the comfort mat 150 is pivotally combined with the cross wire 120 so as to be rotatable.

[0020] The upper and lower plates 130 and 140 are separated from each other by an equal distance on the fixing wire 110 and combined with the fixing wire 110 so as to move upwards and downwards, and hinge parts 132 and 142 to which an upper body 162 and a lower body 164 of the support mat 160 are hinged are provided at designated positions of one side of each of the upper and lower plates 130 and 140.

[0021] The comfort mat 150 is configured such that the upper end of the comfort mat 150 is disposed at the cross wire 120 so as to be rotatable, serves to support the waist (spine) and back regions of a vehicle passenger, and is formed of a synthetic resin or a metal.

[0022] The comfort mat 150 is symmetrically formed with respect to the center thereof and coupling parts 152 coupled to designated positions of the cross wire 120 in the length direction are formed at both sides of the upper portion of the comfort mat 150.

[0023] One end (one of the upper and lower sides) of the support mat 160 is hinged to the hinge parts 132 formed at the upper side of the upper plate 130 and the other end (the other one of the upper and lower sides) of the support mat 160 is hinged to the hinge parts 142 formed at the lower side of the lower plate 140 and, thus, the support mat 160 supports the lower end of the comfort mat 150 at the rear of the comfort mat 150 so that the comfort mat 150 is rotated toward the back region of the passenger.

[0024] Such a support mat 160 includes the upper and lower bodies 162 and 164 respectively including a pair of connection parts 162a and a pair of connection parts 164a separated from each other by an equal distance and provided at left and right sides thereof, and a pair of elastic parts 166, each of which has one end combined with the connection part 162a provided on the upper body 162 and the other end combined with the connection part 164a provided on the lower body 164.

[0025] That is, one side of each of the upper body 162 and the lower body 164 is hinged to the hinge parts 132 or 142 of the upper or lower plate 130 or 140, and the pair of elastic parts 166 is disposed between the connection parts 162a and 164a of the upper and lower bodies 162 and 164 so as to be protrusible toward the comfort mat 150.

[0026] Here, the upper plate 130, the lower plate 140 and the support mat 160 are disposed on the fixing wire 110 and function as a rotating device to rotate the lower end of the comfort mat 150 toward the back region of the passenger.

[0027] The operating device 170 transforms the rotating device to protrude the rotating device toward the comfort mat 150 and is mounted on the fixing wire 110 so as to be located between the upper and lower plates 130 and 140. The operating device 170 functions to protrude the center of the support mat 160 toward the comfort mat 150 so that the comfort mat 150 may be rotated (or protrude) toward the back region of the passenger.

[0028] Such an operating device 170 includes a first base plate 171 provided with both ends combined with the fixing wire 110 so as to be movable in the length direction, a driving motor 172 disposed at one side of the first base plate 171 and rotating a spindle shaft 173, the spindle shaft 173 located at the upper portion of the first base plate 171 so as to be rotatable on its axis and provided with one end combined with the driving motor 172, a pair of spindle nuts 174 separated from each other on the spindle shaft 173 and combined with the spindle shaft 173 using screws, a pair of upper link wires 175, each of which is provided with one end combined with one side of each of the pair of spindle nuts 174 and the other end combined with a designated position of the upper plate 130 so that the other ends of the pair of upper link wires 175 are separated from each other by an equal distance, and a pair of lower link wires 176, each of which is provided with one end combined with the other side of each of the pair of spindle nuts 174 and the other end combined with a designated position of the lower plate 140 so that the other ends of the pair of lower link wires 176 are separated from each other by an equal distance.

[0029] Here, a right-handed screw thread and a left-handed screw thread are symmetrically formed at both halves of the spindle shaft 173 with respect to the center of the spindle shaft 173 so that the pair of spindle nuts 174 may simultaneously slide in opposite directions.

[0030] That is, screw threads of opposite directions are formed at both halves of the spindle shaft 173 based on

the center thereof and, when the spindle shaft 173 rotates in one direction, the pair of spindle nuts 174 moves in directions of approaching each other. At this time, the pair of spindle nuts 174 is supported by the support structure protruding in the upward direction of the first base plate 171, thus safely moves rectilinearly.

[0031] The elevating device 180 serves to move the above-described rotating device in the length direction of the fixing wire 110. The elevating device 180 is mounted at a designated position of the upper portion of the fixing wire 110 and moves the upper plate 130 so as to move the support mat 160 in the length direction of the fixing wire 110.

[0032] Such an elevating device 180 includes a second base plate 181 located above the upper plate 130 and provided with both ends combined with designated positions of the upper portion of the fixing wire 110, a driving motor 182 disposed at one side of the second base plate 181 and rotating a spindle shaft 183, the spindle shaft 183 being located at the upper portion of the second base plate 181 so as to be rotatable on its axis and provided with one end combined with the driving motor 182, a pair of spindle nuts 184 separated from each other on the spindle shaft 183 and combined with the spindle shaft 183 using screws, and a pair of second link wires 185, each of which is provided with one end combined with one side of each of the pair of spindle nuts 184 and the other end combined with a designated position of one side of the upper plate 130 so that the other ends of the pair of second link wires 185 are separated from each other by an equal distance.

[0033] Here, ends of the second link wires 185 in a pair are combined with the spindle nuts 184 and the other ends of the second link wires 185 in a pair are combined with the upper plate 130 such that the second link wires 185 cross each other.

[0034] Further, a right-handed screw thread and a left-handed screw thread are symmetrically formed at both halves of the spindle shaft 183 with respect to the center of the spindle shaft 183 so that a pair of spindle nuts 184 may simultaneously slide in opposite directions.

[0035] That is, screw threads of opposite directions are formed at both halves of the spindle shaft 183 based on the center thereof and, when the spindle shaft 183 rotates in one direction, the pair of spindle nuts 184 moves in directions of becoming away from each other. At this time, the pair of spindle nuts 184 is supported by the support structure protruding in the upward (or forward) direction of the second base plate 181, thus safely moves rectilinearly.

[0036] Hereinafter, an operation of the above-described lumbar support assembly 100 will be described with reference to FIGS. 5 to 7.

[0037] First, when a passenger operates the driving motor 172 of the operating device 170, the spindle shaft 173 rotates in a regular direction and the pair of spindle nuts 174 separated from each other by an equal distance on the spindle shaft 173 slides so as to approach each

other.

[0038] As exemplarily shown in FIG. 5, when the pair of spindle nuts 174 rectilinearly moves so as to approach each other, the first base plate 171 and the lower plate 140 move toward the upper plate 130 by the pair of upper link wires 175 and the pair of lower link wires 176, each of which is provided with one end combined with one side or the other side of each of the pair of spindle nuts 174 and the other end combined with each of the upper and lower plates 130 and 140.

[0039] When the first base plate 171 and the lower plate 140 move toward the upper plate 130, the support mat 160 provided with one end combined with the upper plate 130 and the other end combined with the lower plate 140 protrudes toward the back of the passenger and pushes the comfort mat 150 toward the back of the passenger, as exemplarily shown in FIG. 6.

[0040] Accordingly, the lower end of the comfort mat 150 rotates toward the back and waist regions of the passenger about the upper end of the comfort mat 150 pivotally combined with the cross wire 120 and, thus, the comfort mat 150 supports the back of the passenger while being closely adhered to the back of the passenger.

[0041] Further, when the passenger operates the driving motor 182 of the elevating device 180, the spindle shaft 183 rotates and the pair of spindle nuts 184 separated from each other by an equal distance on the spindle shaft 183 slides in directions of becoming away from each other.

[0042] As exemplarily shown in FIG. 7, when the pair of spindle nuts 184 rectilinearly moves so as to become away from each other, the upper plate 130 is pulled toward the second base plate 181 (moved upwards) by the pair of second link wires 185, each of which is provided with one end combined with one side of each of the pair of spindle nuts 184 and the other end combined with the upper plate 130 so that the other ends of the pair of second link wires 185 are separated from each other by an equal distance.

[0043] When the upper plate 130 is pulled toward the second base plate 181, the support mat 160, the upper and lower plates 130 and 140 connected to each other by the support mat 160, and the operating device 170 located between the upper and lower plates 130 and 140 and connected to the support mat 160 through the upper and lower link wires 175 and 176 integrally move and, thus, the position of the support mat 160 in the vertical direction may be adjusted.

[0044] As described above, the lumbar support assembly in accordance with various embodiments of the present invention allows a passenger to adjust transformation (a vertical height and a forward protruding degree) of the comfort mat according to the passenger's physical conditions and may thus optimally support the back and waist regions of the passenger.

[0045] As is apparent from the above description, the present invention provides a lumbar support assembly which allows a passenger to adjust transformation of a

comfort mat depending on the passenger's physical conditions and may thus optimally support the back and waist regions of the passenger.

[0046] The foregoing descriptions of specific exemplary embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teachings. The exemplary embodiments were chosen and described in order to explain certain principles of the invention and their practical application, to thereby enable others skilled in the art to make and utilize various exemplary embodiments of the present invention, as well as various alternatives and modifications thereof. It is intended that the scope of the invention be defined by the Claims appended hereto.

Claims

1. A lumbar support assembly (100) disposed on a seat back frame within a vehicle seat and configured to support the back and waist regions of a passenger, the lumbar support assembly (100) comprising:

a fixing wire (110) configured to be disposed on the seat back frame;
 a comfort mat (150) provided with an upper end disposed on a cross wire (120) combined with an upper end of the fixing wire (110) so as to be rotatable and configured to support the back and waist regions of the passenger;
 a rotating device disposed on the fixing wire (110) and rotating a lower end of the comfort mat (150) toward the back region of the passenger; and
 an operating device (170) disposed on the fixing wire (110) and transforming the rotating device to protrude toward the comfort mat (150),

wherein the rotating device includes:

an upper plate (130) combined with the fixing wire (110) so as to be movable in a length direction;
 a lower plate (140) separated from the upper plate (130) under a condition that the operating device (170) is interposed therebetween and combined with the fixing wire (110) so as to be movable in the length direction; and
 a support mat (160) provided with a first end hinged to the upper plate (130) and a second end hinged to the lower plate (140) so as to support the lower end of the comfort mat (150) at a rear of the comfort mat (150),

characterized in that the operating device (170) in-

cludes:

a first base plate (171) provided with both ends combined with the fixing wire (110) so as to be movable in the length direction;
 a driving motor (172) disposed at one side of the first base plate (171) and rotating a spindle shaft (173);
 the spindle shaft (173) located on the first base plate (171) so as to be rotatable on its axis and combined with the driving motor (172);
 a pair of spindle nuts (174) separated from each other on the spindle shaft (173) and rectilinearly moving in opposite directions during rotation of the spindle shaft (173);
 a pair of upper link wires (175) combined between the pair of spindle nuts (174) and the upper plate (130); and
 a pair of lower link wires (176) combined between the pair of spindle nuts (174) and the lower plate (140).

2. The lumbar support assembly (100) of claim 1, wherein screw threads of opposite directions are formed at both halves of the spindle shaft (173) of the operating device (170) based on a center thereof and, when the spindle shaft (173) rotates in one direction, the pair of spindle nuts (174) moves in directions approaching each other.

3. The lumbar support assembly (100) of claim 1 or 2, further comprising:

an elevating device (180) disposed on the fixing wire (110) and moving the rotating device in a length direction of the fixing wire (110).

4. The lumbar support assembly (100) of claim 3, wherein the elevating device (180) includes:

a second base plate (181) located above the upper plate (130) and combined with the fixing wire (110);
 a driving motor (182) disposed at one side of the second base plate (181) and rotating a spindle shaft (183);
 the spindle shaft (183) located on the second base plate (181) so as to be rotatable on its axis and combined with the driving motor (182);
 a pair of spindle nuts (184) separated from each other on the spindle shaft (183) and rectilinearly moving in opposite directions during rotation of the spindle shaft (183); and
 a pair of second link wires (185) combined between the pair of spindle nuts (184) and the upper plate (130).

5. The lumbar support assembly (100) of claim 4,

wherein screw threads of opposite directions are formed at both halves of the spindle shaft (183) of the elevating device (180) based on a center thereof and, when the spindle shaft (183) rotates in one direction, the pair of spindle nuts (184) moves in directions away from each other.

6. The lumbar support assembly (100) of any one of claims 1 to 5, wherein the support mat (160) includes:

an upper body (162) provided with a first side hinged to hinge parts (132) formed on the upper plate (130) and a second side having connection parts (162a);
a lower body (164) provided with a first side hinged to hinge parts (142) formed on the lower plate (140) and a second side having connection parts (164a); and
elastic parts (166) disposed between the connection parts (162a) of the upper body (162) and the connection parts (164a) of the lower body (164) and configured to be protrusible toward the comfort mat (150).

Patentansprüche

1. Eine Lendenstützvorrichtung (100), die an einem Sitzlehnenrahmen innerhalb eines Fahrzeugsitzes angeordnet ist und konfiguriert ist, um den Rücken- und Taillenbereich eines Insassen zu stützen, wobei die Lendenstützvorrichtung (100) aufweist:

einen Befestigungsdraht (110), der konfiguriert ist, um am Sitzlehnenrahmen angeordnet zu sein,
eine Komfortmatte (150), die mit einem oberen Ende vorgesehen ist, das an einem Querdraht (120) angeordnet ist, der mit einem oberen Ende des Befestigungsdrahts (110) verbunden ist, um drehbar zu sein, und die konfiguriert ist, um den Rücken- und Taillenbereich des Insassen zu stützen,
eine Drehvorrichtung, die am Befestigungsdraht (110) angeordnet ist und ein unteres Ende der Komfortmatte (150) in Richtung zum Rückenbereich des Insassen dreht, und
eine Betätigungsvorrichtung (170), die am Befestigungsdraht (110) angeordnet ist und die Drehvorrichtung überführt, um in Richtung zur Komfortmatte (150) hin vorzustehen,

wobei die Drehvorrichtung aufweist:

eine obere Platte (130), die mit dem Befestigungsdraht (110) verbunden ist, um in einer Längsrichtung bewegbar zu sein,
eine untere Platte (140), die von der oberen Platte

(130) unter der Bedingung getrennt ist, dass die Betätigungsvorrichtung (170) dazwischen angeordnet ist, und die mit dem Befestigungsdraht (110) verbunden ist, um in der Längsrichtung bewegbar zu sein, und
eine Stützmatte (160), die mit einem ersten Ende, das mit der oberen Platte (130) gelenkverbunden ist, und mit einem zweiten Ende vorgesehen ist, das mit der unteren Platte (140) gelenkverbunden ist, um das untere Ende der Komfortmatte (150) an einer Rückseite der Komfortmatte (150) zu stützen,

dadurch gekennzeichnet, dass die Betätigungsvorrichtung (170) aufweist:

eine erste Basisplatte (171), die mit beiden Enden mit dem Befestigungsdraht (110) verbunden vorgesehen ist, um in der Längsrichtung bewegbar zu sein,
einen Antriebsmotor (172), der an einer Seite der ersten Basisplatte (171) angeordnet ist und eine Spindelwelle (173) dreht,
wobei die Spindelwelle (173) an der ersten Basisplatte (171) angeordnet ist, um um ihre Achse herum drehbar zu sein, und mit dem Antriebsmotor (172) verbunden ist,
ein Paar von Spindelmuttern (174), die auf der Spindelwelle (173) voneinander getrennt sind und sich während einer Drehung der Spindelwelle (173) geradlinig in entgegengesetzten Richtungen bewegen,
ein Paar von oberen Verbindungsdrähten (175), die zwischen dem Paar von Spindelmuttern (174) und der oberen Platte (130) verbunden sind, und
ein Paar von unteren Verbindungsdrähten (176), die zwischen dem Paar von Spindelmuttern (174) und der unteren Platte (140) verbunden sind.

2. Die Lendenstützvorrichtung (100) gemäß Anspruch 1, wobei Schraubengewinde mit entgegengesetzten Richtungen an beiden Hälften der Spindelwelle (173) der Betätigungsvorrichtung (170) basierend auf einer Mitte davon geformt sind, und, wenn sich die Spindelwelle (173) in eine Richtung dreht, sich das Paar von Spindelmuttern (174) in Richtungen aufeinander zu bewegt.
3. Die Lendenstützvorrichtung (100) gemäß Anspruch 1 oder 2, ferner aufweisend:

eine Hebevorrichtung (180), die am Befestigungsdraht (110) angeordnet ist und die Drehvorrichtung in einer Längsrichtung des Befestigungsdrahts (110) bewegt.

4. Die Lendenstützvorrichtung (100) gemäß Anspruch 3, wobei die Hebevorrichtung (180) aufweist:

eine zweite Basisplatte (181), die sich oberhalb der oberen Platte (130) befindet und mit dem Befestigungsdraht (110) verbunden ist, 5
einen Antriebsmotor (182), der an einer Seite der zweiten Basisplatte (181) angeordnet ist und eine Spindelwelle (183) dreht, 10
wobei sich die Spindelwelle (183) an der zweiten Basisplatte (181) befindet, um um ihre Achse herum drehbar zu sein, und mit dem Antriebsmotor (182) verbunden ist, 15
ein Paar von Spindelmuttern (184), die auf der Spindelwelle (183) voneinander getrennt sind und sich während einer Drehung der Spindelwelle (183) geradlinig in entgegengesetzte Richtungen bewegen, und 20
ein Paar von zweiten Verbindungsdrähten (185), das mit dem Paar von Spindelmuttern (184) und der oberen Platte (130) verbunden ist.

5. Die Lendenstützvorrichtung (100) gemäß Anspruch 4, wobei Schraubengewinde mit entgegengesetzten Richtungen an beiden Hälften der Spindelwelle (183) der Hebevorrichtung (180) basierend auf einer Mitte davon geformt sind, und, wenn sich die Spindelwelle (183) in eine Richtung dreht, sich das Paar von Spindelmuttern (184) in Richtungen voneinander weg bewegt. 25 30
6. Die Lendenstützvorrichtung (100) gemäß irgendeinem der Ansprüche 1 bis 5, wobei die Stützmatte (160) aufweist: 35

einen oberen Körper (162), der vorgesehen ist mit einer ersten Seite, die mit Gelenkteilen (132), die an der oberen Platte (130) geformt sind, gelenkverbunden ist, und mit einer zweiten Seite, die Verbindungsteile (162a) hat, 40
einen unteren Körper (164), der vorgesehen ist mit einer ersten Seite, die mit Gelenkteilen (142), die an der unteren Platte (140) geformt sind, gelenkverbunden ist, und mit einer zweiten Seite, die Verbindungsteile (164a) hat, und 45
elastische Teile (166), die zwischen den Verbindungsteilen (162a) des oberen Körpers (162) und den Verbindungsteilen (164a) des unteren Körpers (164) angeordnet sind und konfiguriert sind, um in Richtung zu der Komfortmatte (150) vorstehbar zu sein. 50

Revendications

1. Ensemble de support de lombaire (100) disposé sur un bâti de dossier de siège à l'intérieur d'un siège de véhicule et configuré pour supporter les régions

dorsale et de ceinture d'un passager, l'ensemble de support de lombaire (100) comprenant :

un fil de fixation (110) configuré pour être disposé sur le bâti de dossier de siège ;
un coussinet de confort (150) prévu avec une extrémité supérieure disposée sur un fil transversal (120) combiné avec une extrémité supérieure du fil de fixation (110) afin de pouvoir tourner et être configuré pour supporter les régions dorsale et de ceinture du passager ;
un dispositif rotatif disposé sur le fil de fixation (110) et faisant tourner une extrémité inférieure du coussinet de confort (150) vers la région dorsale du passager ; et
un dispositif de commande (170) disposé sur le fil de fixation (110) et transformant le dispositif rotatif pour faire saillie vers le coussinet de confort (150),

dans lequel le dispositif rotatif comprend :

une plaque supérieure (130) combinée avec le fil de fixation (110) afin d'être mobile dans une direction de longueur ;
une plaque inférieure (140) séparée de la plaque supérieure (130) dans une condition dans laquelle le dispositif de commande (170) est intercalé entre elles et combiné avec le fil de fixation (110) afin d'être mobile dans le sens de la longueur ; et
un coussinet de support (160) prévu avec une première extrémité articulée par rapport à la plaque supérieure (130) et une seconde extrémité articulée par rapport à la plaque inférieure (140) afin de supporter l'extrémité inférieure du coussinet de confort (150) au niveau d'une partie arrière du coussinet de confort (150),

caractérisé en ce que le dispositif de commande (170) comprend :

une première plaque de base (171) prévue avec deux extrémités combinées avec le fil de fixation (110) afin d'être mobile dans le sens de la longueur ;
un moteur d'entraînement (172) disposé au niveau d'un côté de la première plaque de base (171) et faisant tourner un arbre de broche (173) ;
l'arbre de broche (173) positionné sur la première plaque de base (171) afin de pouvoir tourner sur son axe et combiné avec le moteur d'entraînement (172) ;
une paire d'écrous de broche (174) séparés l'un de l'autre sur l'arbre de broche (173) et se déplaçant de manière rectiligne dans les directions opposées pendant la rotation de l'arbre de bro-

- che (173) ;
 une paire de fils de liaison supérieurs (175) combinés entre la paire d'écrous de broche (174) et la plaque supérieure (130) ; et
 une paire de fils de liaison inférieurs (176) combinés entre la paire d'écrous de broche (174) et la plaque inférieure (140). 5
2. Ensemble de support de lombaire (100) selon la revendication 1, dans lequel des filetages de vis de directions opposées sont formés au deux moitiés de l'arbre de broche (173) du dispositif de commande (170) sur la base de son centre et, lorsque l'arbre de broche (173) tourne dans une direction, la paire d'écrous de broche (174) se déplacent dans des directions se rapprochant l'un de l'autre. 10 15
3. Ensemble de support de lombaire (100) selon la revendication 1 ou 2, comprenant en outre : un dispositif d'élévation (180) disposé sur le fil de fixation (110) et déplaçant le dispositif rotatif dans le sens de la longueur du fil de fixation (110). 20
4. Ensemble de support de lombaire (100) selon la revendication 3, dans lequel le dispositif d'élévation (180) comprend : 25
- une seconde plaque de base (181) positionnée au-dessus de la plaque supérieure (130) et combinée avec le fil de fixation (110) ; 30
- un moteur d'entraînement (182) disposé d'un côté de la seconde plaque de base (181) et faisant tourner un arbre de broche (183) ;
 l'arbre de broche (183) positionné sur la seconde plaque de base (181) afin de pouvoir tourner sur son axe et combiné avec le moteur d'entraînement (182) ; 35
- une paire d'écrous de broche (184) séparés l'un de l'autre sur l'arbre de broche (183) et se déplaçant de manière rectiligne dans des directions opposées pendant la rotation de l'arbre de broche (183) ; et 40
- une paire de seconds fils de liaison (185) combinés entre la paire d'écrous de broche (184) et la plaque supérieure (130). 45
5. Ensemble de support de lombaire (100) selon la revendication 4, dans lequel les filetages de vis de directions opposées sont formés aux deux moitiés de l'arbre de broche (183) du dispositif d'élévation (180) sur la base de son centre et, lorsque l'arbre de broche (183) tourne dans une direction, la paire d'écrous de broche (184) se déplacent dans des directions à distance l'un de l'autre. 50 55
6. Ensemble de support de lombaire (100) selon l'une quelconque des revendications 1 à 5, dans lequel le coussinet de support (160) comprend :

un corps supérieur (162) prévu avec un premier côté articulé aux parties d'articulation (132) formées sur la plaque supérieure (130) et un second côté ayant des parties de raccordement (162a) ;
 un corps inférieur (164) prévu avec un premier côté articulé par rapport aux parties d'articulation (142) formées sur la plaque inférieure (140) et un second côté ayant des parties de raccordement (164a) ; et
 les parties élastiques (166) disposées entre les parties de raccordement (162a) du corps supérieur (162) et les parties de raccordement (164a) du corps inférieur (164) et configurées pour pouvoir faire saillie vers le coussinet de confort (150).

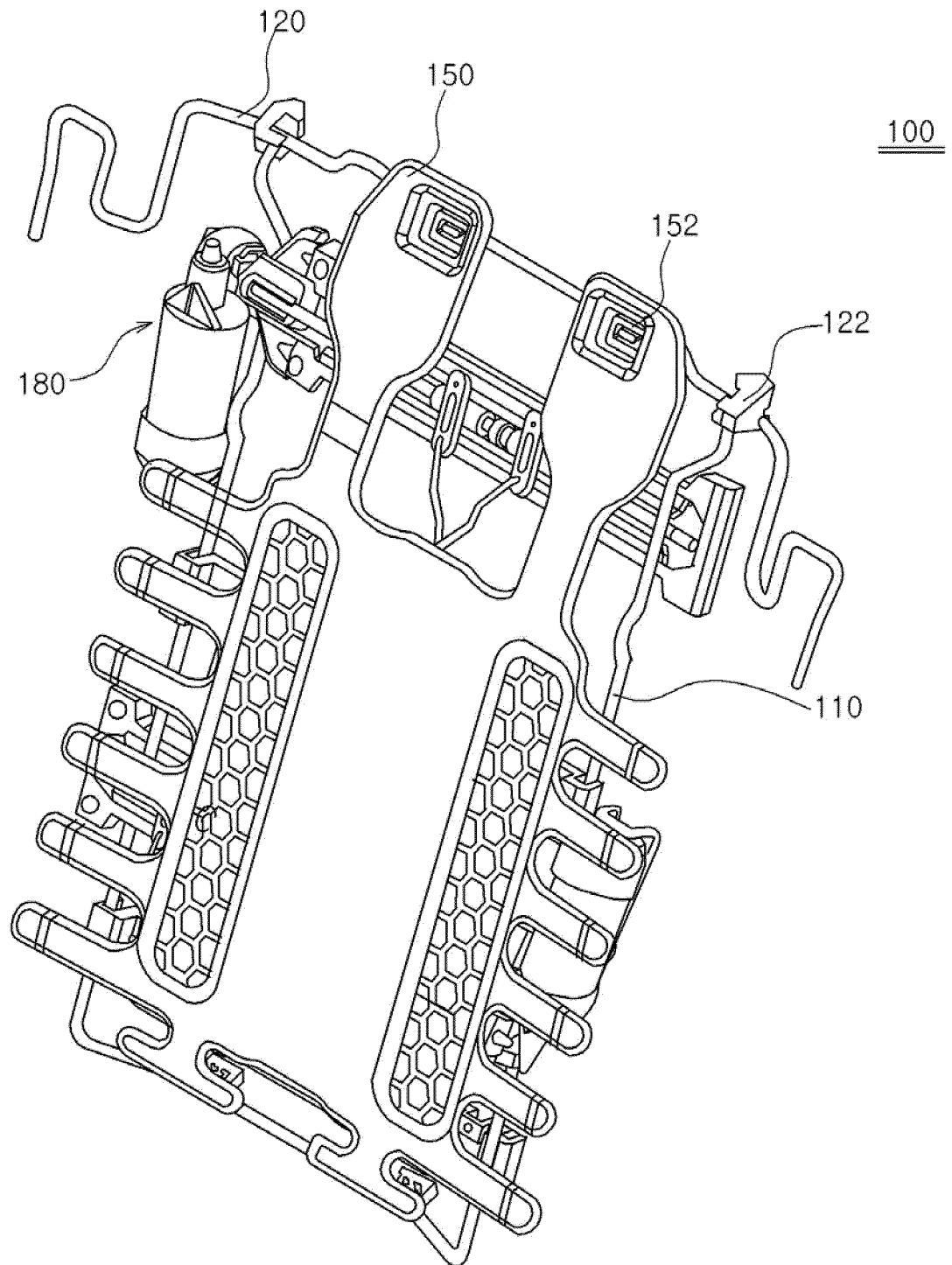


FIG. 1

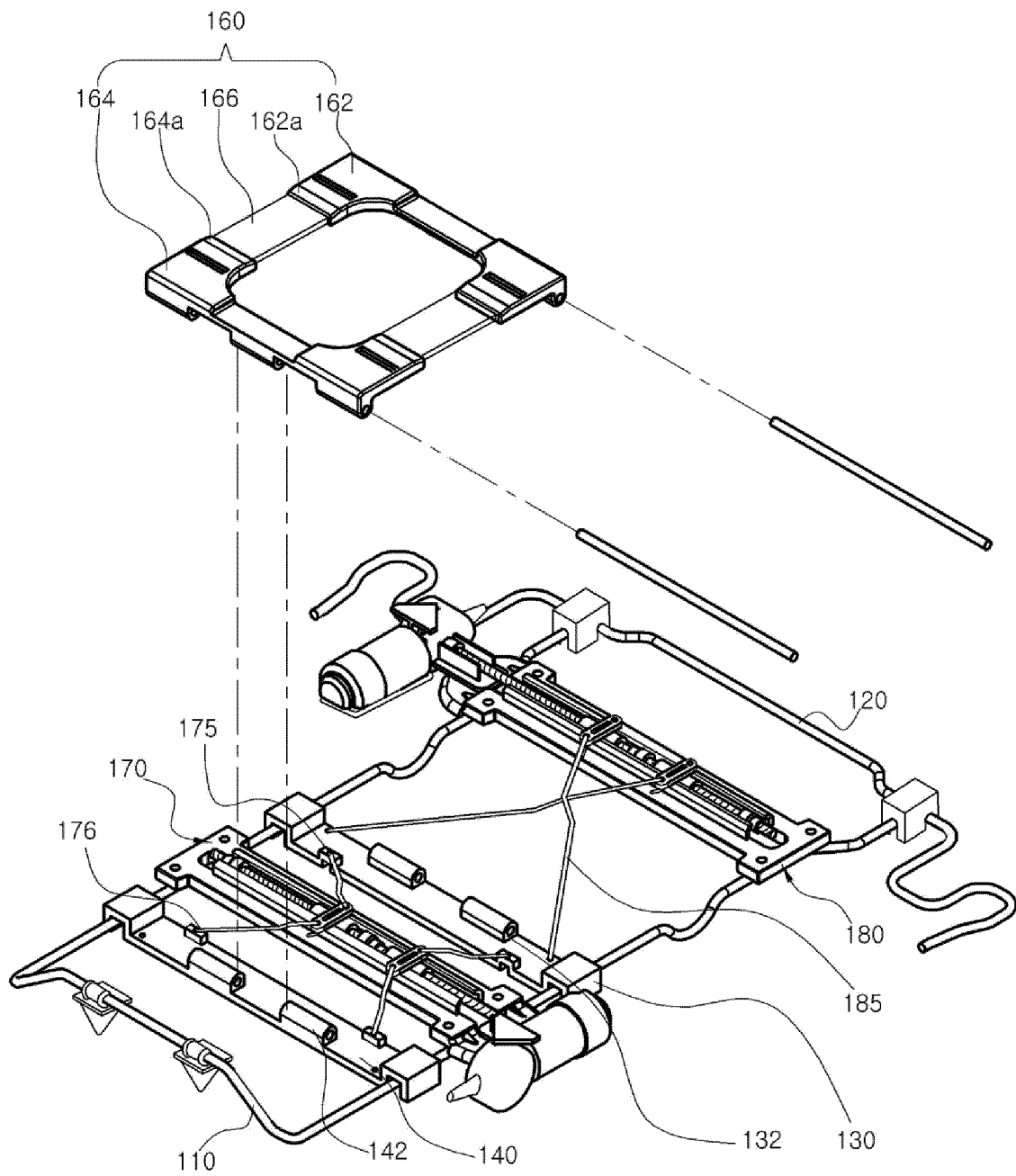


FIG. 2

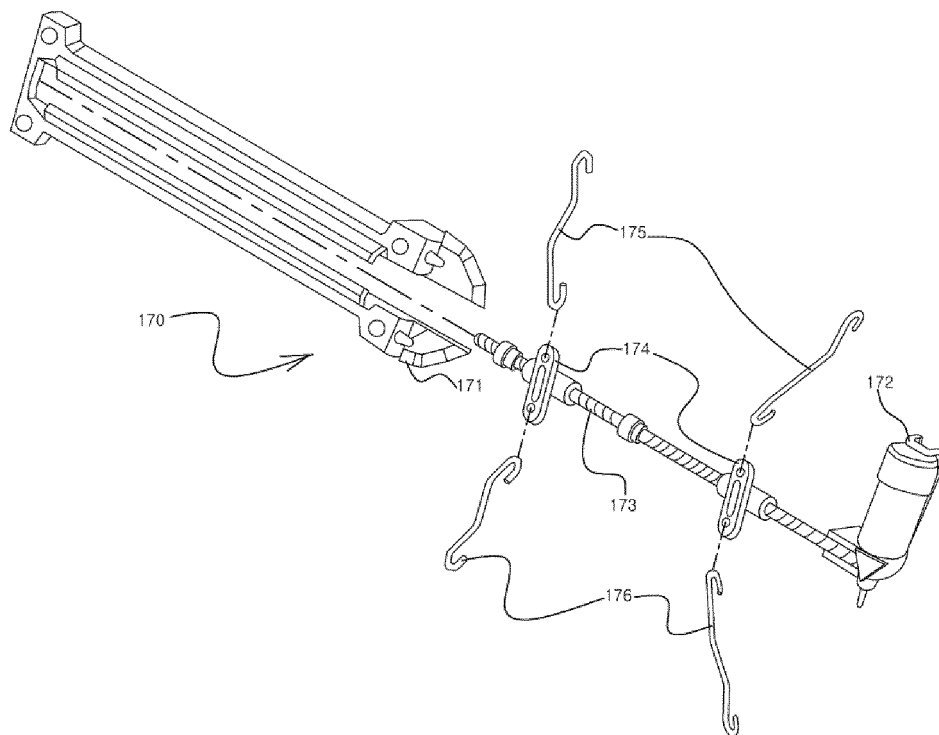


FIG. 3

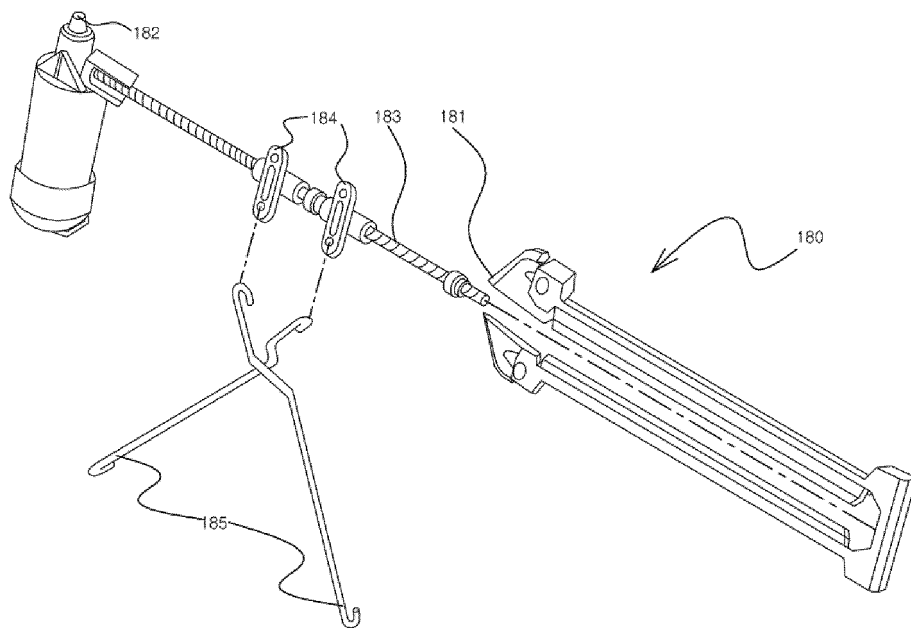


FIG. 4

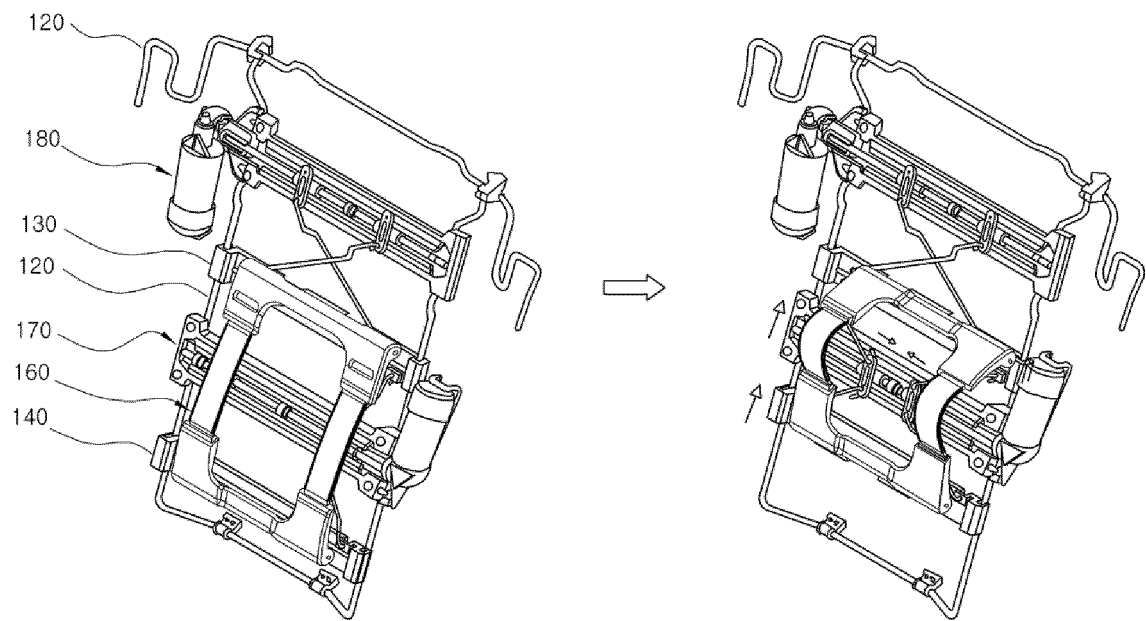


FIG. 5

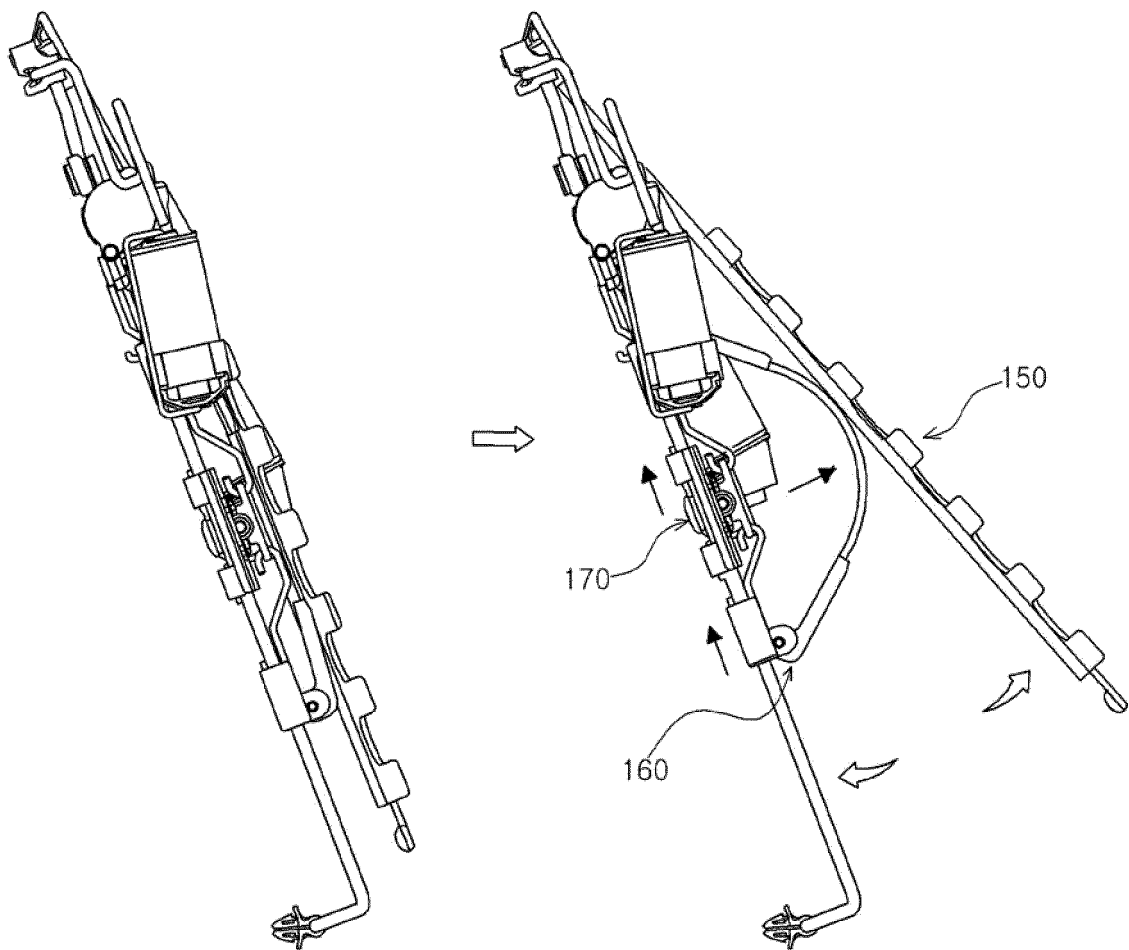


FIG. 6

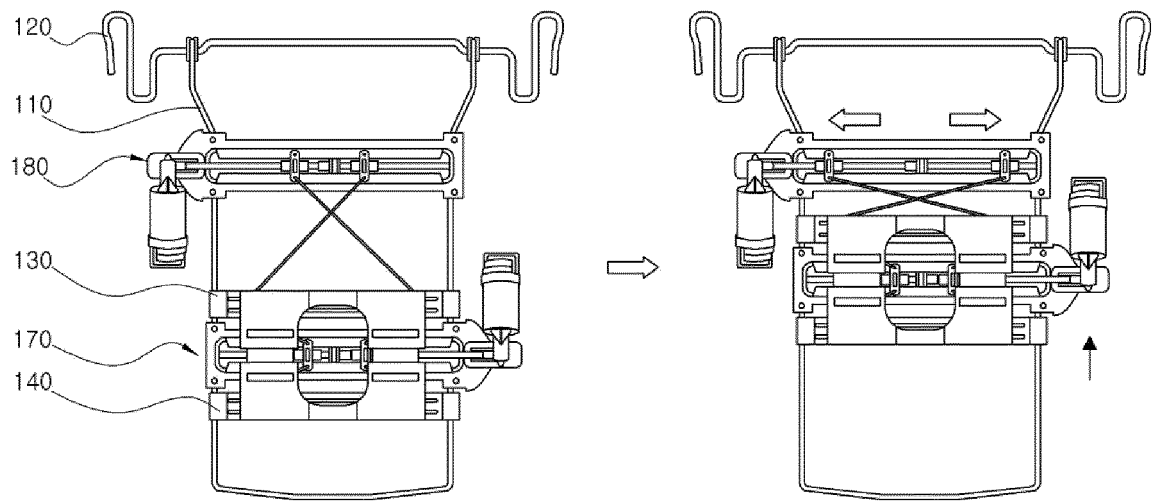


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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